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Evaluation of Rural Air Quality Simulation Models. Appendix G Statistical Tables for PPSP (Power Plant Siting Program)

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16. ABSTRACT

This report summarizes the results of a comprehensive evaluation of "rural" point source air quality simulation models using routinely collected data around the Clifty Creek power plant. The report contains numerous tabulations of each model's performance in terms of statistical measures of performance recommended by the American Meteorological Society.

The purpose of the report is two-fold. First, it serves to document for the models considered, and similar models, their relative performance. Second, it provides the basis for a peer scientific review of the models. To stay within the spirit of this latter purpose, the report is limited to a factual presentation of information and performance statistics. No attempt is made to interpret the statistics or to provide direction to the reader, lest reviewers might be biased.

17. KEY WORDS AND DOCUMENT ANALYSIS

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APPENDIX G

Statistical Tables for PPSP

As an addendum to "Evaluation of Rural Air Quality Simulation Models"

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APPENDIX G: Statistical Tables for PPSP

This appendix documents the performance of an additional rural model that was submitted to EPA by the developer after the original evaluation of eight models had been completed. The Maryland Power Plant Siting Program (PPSP) model was developed by Martin Marietta Corporation; it is based on the original computer code of the EPA single source (CRSTER) model, but contains a number of major changes. The following is a list of the features of PPSP used in the evaluation that distinquish it from CRSTER:

- Briggs dispersion coefficients
- Stability class selection based on (1) convective theory of scaling for daytime and (2) the Turner algorithm for nighttime
- Partial penetration of buoyant plume into the capping inversion
- Briggs plume rise formulas, including the "breakup" and "touchdown" models
- No terrain adjustments

These features and associated options were selected by the developer and the model was run as specified by his directions. These features appear to correct some of the scientific deficiencies in Gaussian models which had been noted in a peer review of the original eight rural models. (See "Synthesis of the Rural Model Reviews," EPA Report No. EPA 600/3-83-108).

All of the models, including PPSP, had to be modified to access the data base in the unique format in which it was structured. In the case of PPSP the following model changes in input and output formats were needed to operate the model and to provide concentration estimates in a suitable format for statistical evaluation: (1) annual source characteristics and source data

input hourly, and (2) concentrations computed for up to six arbitrarily located receptors.

Before the evaluation was begun, a "test package" was forwarded to the model developer for his approval. A similar approach had been previously used for the other eight rural models. The package consisted of a tape containing (1) the modified source code for the PPSP model, (2) the meteorological data, (3) the emissions and source characteristics, (4) the control inputs for the model runs, and (5) the model predictions for both 1975 and 1976 at Clifty Creek. The model developer responded to the request and indicated that the model had been correctly set up and properly used.

The data bases and statistical tests used for the original eight rural models and for PPSP are identical. However, a few minor differences between Tables A through D and the tables appearing in the main body of the report should be noted. Table A which summarizes the comparisons between the 25 highest and 25 highest predicted concentrations is unchanged. Table B which summarizes performance statistics using all concentrations paired both in time and space has been modified slightly. Specifically, the column containing the normality check for residuals has been dropped since it provides no direct measure of model performance. Secondly, the columns related to gross variability have been replaced by the square roots of these quantities which are unquestionably easier to interpret. Third, confidence limits shown in the main report which are expressed as +/- intervals are replaced by the actual lower and upper confidence bounds. Table C, which compares the highest measured and predicted concentrations among the six stations has been modified to include the same statistics for the second highest values in addition to the

highest values. Also the format is different since only one model (PPSP) is shown in Table C. Finally, Table D has been modified to include the measured and predicted values associated with each of the residual terms. Also shown are the station and time of occurrence for each of the maximum values.

Generally the results show that concentrations estimated by PPSP are almost uniformly higher than the measured values, for both years, for all three averaging periods and for each of the various data set combinations. For the comparisons involving the highest 25 concentrations (Table A), the model estimates are typically a factor of 2 to 3 and occasionally 5 times higher than the corresponding measured averages. Consistent with this result, the variance comparisons show low ratios between measured and predicted values indicating that the spread among the 25 highest predicted values is significantly greater than the spread among the 25 highest observed values. Overall, comparisons of these results with the eight models evaluated previously, indicate that performance statistics for PPSP appear significantly apart from those for the other models taken as a whole.

TABLE A. COMPARISON OF 25 HIGHEST OBSERVED AND PREDICTED SO2 CONCENTRATION VALUES (UNPAIRED IN TIME OR LOCATION)

CLIFTY CREEK (1975) MODEL: PPSP AVERAGING TIME: 1 HOUR

DATA SETS	AVERAGE OBSERVED VALUE (Co) (UG/M**3)	AVERAGE PREDICTED VALUE (Cp) (UG/M**3)	DIFFERENCE OF AVERAGES (Co - Cp) (UG/M**3)	DIFFERENCE OF MEDIANS (Co - Cp) (UG/M**3)	VARIANCE COMPARISON (So**2/Sp**2)	FREQUENCY DISTRIBUTION COMPARISON (FOBS-FPRED) (FRACTION)
1. ALL STATIONS/ALL EVENTS (A-4A)	791	4001	-3210 (-3500, -2920)	-3134 (-3349, -2822)	.13 (.06, .29)	1.00 (.385)
2. BY STATION/ALL EVENTS (A-4B)						
STATION 1	509	1174	-665 (-770, -560)	-677 (-757, -520)	.16 (.07, .35)	1.00 (.385)
STATION 2	535	1953	-1418 (-1688, -1149)	-1266 (-1440, -1078)	.03 (.01, .06)	1.00 (.385)
STATION 3	580	3032	-2452 (-2812, -2092)	-2318 (-2483, -1980)	.10 (.04, .22)	1.00 (.385)
STATION 4	550	1421	-871 (-1033, -709)	-773 (-944, -653)	.12 (.05, .27)	1.00 (.385)
STATION 5	226	3500	-3274 (-3628, -2920)	-3158 (-3495, -2948)	.01 (.00, .02)	1.00 (.385)
STATION 6	513	1662	-1149 (-1370, -928)	-1012 (-1226, -890)	.22 (.10, .51)	.96 (.385)
3. BY METEOROLOGICAL CONDITION (A-5)						
A. WIND SPEED						
< 2.5 M/SEC	652	3994	-3341 (-3630, -3053)	-3258 (-3473, -2970)	.08 (.03, .18)	1.00 (.385)
2.5 TO 5.0	652	2075	-1423 (-1631, -1214)	-1324 (-1412, -1221)	.27 (.12, .61)	1.00 (.385)
> 5.0 M/SEC	490	604	-114 (-217, -11)	-94 (-167, 3)	.35 (.15, .79)	.32 (.385)
B. STABILITY GROUP						
CLASS A & B	481	2673	-2192 (-2581, -1803)	-2050 (-2405, -1671)	.02 (.01, .04)	1.00 (.385)
CLASS C	679	2505	-1826 (-2161, -1490)	-1828 (-1979, -1341)	.10 (.04, .23)	1.00 (.385)
CLASS D	587	3558	-2971 (-3309, -2633)	-2812 (-3130, -2521)	.01 (.00, .02)	1.00 (.385)
CLASS E & F	398	978	-581 (-759, -402)	-520 (-757, -373)	.46 (.20, 1.04)	.84 (.385)

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TABLE A. COMPARISON OF 25 HIGHEST OBSERVED AND PREDICTED SO2 CONCENTRATION VALUES (UNPAIRED IN TIME OR LOCATION)

CLIFTY CREEK (1976) MODEL: PPSP AVERAGING TIME: 1 HOUR

DATA SETS	AVERAGE OBSERVED VALUE (Co) (UG/M**3)	AVERAGE PREDICTED VALUE (Cp) (UG/M**3)	DIFFERENCE OF AVERAGES (Co - Cp) (UG/M**3)	DIFFERENCE OF MEDIANS (Co - Cp) (UG/M**3)	VARIANCE COMPARISON (So**2/Sp**2)	FREQUENCY DISTRIBUTION COMPARISON (FOBS-FPRED) (FRACTION)
1. ALL STATIONS/ALL EVENTS (A-4A)	772	4343	-3571 (-4005, -3137)	-3123 (-3957, -2828)	.01 (.00, .02)	1.00 (.385)
2. BY STATION/ALL EVENTS (A-4B)						
STATION 1	582	1031	-450 (-681, -219)	-221 (-320, -193)	.03 (.02, .08)	.92 (.385)
STATION 2	659	1942	-1283 (-1547, -1019)	-1244 (-1403, -907)	.05 (.02, .12)	1.00 (.385)
STATION 3	450	3193	-2742 (-3265, -2219)	-2087 (-2790, -1941)	.01 (.00, .02)	1.00 (.385)
STATION 4	547	1439	-892 (-1133, -652)	-608 (-806, -565)	.03 (.01, .06)	1.00 (.385)
STATION 5	321	3562	-3240 (-3711, -2770)	-3124 (-3269, -2563)	.02 (.01, .05)	1.00 (.385)
STATION 6	497	1707	-1211 (-1488, -933)	-1030 (-1314, -831)	.02 (.01, .05)	1.00 (.385)
3. BY METEOROLOGICAL CONDITION (A-5)						
A. WIND SPEED						
< 2.5 M/SEC	669	4343	-3674 (-4109, -3239)	-3231 (-4030, -2956)	.02 (.01, .04)	1.00 (.385)
2.5 TO 5.0	668	1921	-1254 (-1412, -1095)	-1188 (-1373, -1052)	.08 (.03, .18)	1.00 (.385)
> 5.0 M/SEC	458	642	-184 (-271, -97)	-164 (-218, -101)	.47 (.21, 1.06)	.72 (.385)
B. STABILITY GROUP						
CLASS A & B	541	2445	-1904 (-2405, -1402)	-1525 (-2055, -1257)	.01 (.01, .03)	1.00 (.385)
CLASS C	631	3140	-2509 (-3039, -1978)	-2168 (-2290, -1809)	.01 (.01, .03)	1.00 (.385)
CLASS D	672	3300	-2628 (-3034, -2222)	-2391 (-2767, -2019)	.01 (.00, .02)	1.00 (.385)
CLASS E & F	343	1194	-850 (-1181, -520)	-646 (-852, -406)	.01 (.01, .03)	.96 (.385)

TABLE A. COMPARISON OF 25 HIGHEST OBSERVED AND PREDICTED SO2 CONCENTRATION VALUES (UNPAIRED IN TIME OR LOCATION)

CLIFTY CREEK (1975) MODEL: PPSP AVERAGING TIME: 3 HOURS

DATA SETS	AVERAGE OBSERVED VALUE (Co) (UG/M**3)	AVERAGE PREDICTED VALUE (Cp) (UG/M**3)	DIFFERENCE OF AVERAGES (Co - Cp) (UG/M**3)	DIFFERENCE OF MEDIANS (Co - Cp) (UG/M**3)	VARIANCE COMPARISON (So**2/Sp**2)	FREQUENCY DISTRIBUTION COMPARISON (FOBS-FPRED) (FRACTION)
1. ALL STATIONS/ALL EVENTS (A-4A)	476	1992	-1515 (-1702, -1329)	-1357 (-1486, -1281)	.05 (.02, .12)	1.00 (.385)
2. BY STATION/ALL EVENTS (A-4B)						
STATION 1	323	621	-298 (-377, -219)	-264 (-335, -195)	.18 (.08, .40)	.92 (.385)
STATION 2	287	835	-548 (-648, -449)	-513 (-602, -409)	.14 (.06, .31)	1.00 (.385)
STATION 3	316	1779	-1463 (-1672, -1253)	-1414 (-1493, -1207)	.09 (.04, .21)	1.00 (.385)
STATION 4	313	735	-421 (-488, -354)	-399 (-478, -347)	.45 (.20, 1.03)	.96 (.385)
STATION 5	126	1566	-1440 (-1608, -1273)	-1339 (-1582, -1163)	.01 (.01, .03)	1.00 (.385)
STATION 6	258	826	-568 (-655, -480)	-597 (-661, -481)	.48 (.21, 1.09)	.96 (.385)
3. BY METEOROLOGICAL CONDITION (A-5)						
A. WIND SPEED						
< 2.5 M/SEC	346	1905	-1560 (-1764, -1355)	-1433 (-1557, -1307)	.04 (.02, .10)	1.00 (.385)
2.5 TO 5.0	390	1418	-1028 (-1157, -899)	-965 (-1125, -859)	.14 (.06, .32)	1.00 (.385)
> 5.0 M/SEC	293	357	-65 (-156, 26)	-61 (-123, 23)	.46 (.20, 1.05)	.24 (.385)
B. STABILITY GROUP						
CLASS A & B	228	989	-760 (-973, -548)	-537 (-884, -469)	.07 (.03, .15)	.96 (.385)
CLASS C	359	1376	-1017 (-1135, -898)	-1026 (-1107, -878)	.20 (.09, .46)	1.00 (.385)
CLASS D	386	1842	-1456 (-1661, -1251)	-1330 (-1496, -1167)	.03 (.01, .07)	1.00 (.385)
CLASS E & F	197	551	-355 (-525, -184)	-235 (-331, -154)	.08 (.04, .19)	.76 (.385)

TABLE A. COMPARISON OF 25 HIGHEST OBSERVED AND PREDICTED SO2 CONCENTRATION VALUES (UNPAIRED IN TIME OR LOCATION)

CLIFTY CREEK (1976) MODEL: PPSP AVERAGING TIME: 3 HOURS

DATA SETS	AVERAGE OBSERVED VALUE (Co) (UG/M**3)	AVERAGE PREDICTED VALUE (Cp) (UG/M**3)	DIFFERENCE OF AVERAGES (Co - Cp) (UG/M**3)	DIFFERENCE OF MEDIANS (Co - Cp) (UG/M**3)	VARIANCE COMPARISON (So**2/Sp**2)	FREQUENCY DISTRIBUTION COMPARISON (FOBS-FPRED) (FRACTION)
1. ALL STATIONS/ALL EVENTS (A-4A)	481	2153	-1672 (-1870, -1474)	-1631 (-1712, -1457)	.03 (.01, .06)	1.00 (.385)
2. BY STATION/ALL EVENTS (A-4B)						
STATION 1	373	482	-109 (-199, -20)	-55 (-131, -10)	.14 (.06, .32)	.32 (.385)
STATION 2	374	861	-488 (-614, -361)	-400 (-580, -299)	.10 (.04, .22)	.88 (.385)
STATION 3	253	1774	-1521 (-1773, -1268)	-1323 (-1582, -1201)	.02 (.01, .04)	1.00 (.385)
STATION 4	360	812	-452 (-552, -352)	-458 (-495, -338)	.21 (.09, .49)	.96 (.385)
STATION 5	177	1608	-1431 (-1651, -1211)	-1478 (-1765, -1025)	.03 (.01, .07)	1.00 (.385)
STATION 6	288	853	-565 (-717, -413)	-468 (-586, -372)	.02 (.01, .05)	1.00 (.385)
3. BY METEOROLOGICAL CONDITION (A-5)						
A. WIND SPEED						
< 2.5 M/SEC	350	2071	-1721 (-1935, -1506)	-1655 (-1778, -1467)	.02 (.01, .04)	1.00 (.385)
2.5 TO 5.0	456	1240	-784 (-960, -608)	-677 (-770, -538)	.04 (.02, .09)	1.00 (.385)
> 5.0 M/SEC	271	390	-119 (-192, -45)	-147 (-187, -40)	.41 (.18, .93)	.44 (.385)
B. STABILITY GROUP						
CLASS A & B	264	1145	-881 (-1177, -585)	-616 (-857, -427)	.01 (.01, .03)	1.00 (.385)
CLASS C	364	1320	-955 (-1136, -775)	-811 (-1007, -697)	.05 (.02, .11)	1.00 (.385)
CLASS D	443	1846	-1403 (-1639, -1168)	-1337 (-1544, -1037)	.02 (.01, .04)	1.00 (.385)
CLASS E & F	218	550	-332 (-484, -180)	-199 (-304, -134)	.05 (.02, .12)	.80 (.385)

TABLE A. COMPARISON OF 25 HIGHEST OBSERVED AND PREDICTED SO2 CONCENTRATION VALUES (UNPAIRED IN TIME OR LOCATION)

CLIFTY CREEK (1975) MODEL: PPSP AVERAGING TIME: 24 HOURS

DATA SETS	AVERAGE OBSERVED VALUE (Co) (UG/M**3)	AVERAGE PREDICTED VALUE (Cp) (UG/M**3)	DIFFERENCE OF AVERAGES (Co - Cp) (UG/M**3)	DIFFERENCE OF MEDIANS (Co - Cp) (UG/M**3)	VARIANCE COMPARISON (So**2/Sp**2)	FREQUENCY DISTRIBUTION COMPARISON (FOBS-FPRED) (FRACTION)
1. ALL STATIONS/ALL EVENTS (A-4A)	127	495	-368 (-412, -324)	-359 (-388, -310)	.10 (.04, .23)	1.00 (.385)
2. BY STATION/ALL EVENTS (A-4B)						
STATION 1	97	135	-38 (-62, -14)	-25 (-49, -12)	.43 (.19, .98)	.44 (.385)
STATION 2	65	173	-108 (-132, -83)	-109 (-123, -79)	.29 (.13, .66)	.96 (.385)
STATION 3	78	434	-356 (-410, -303)	-347 (-406, -275)	.10 (.04, .22)	1.00 (.385)
STATION 4	84	188	-103 (-127, -80)	-96 (-123, -72)	.11 (.05, .26)	.96 (.385)
STATION 5	35	342	-307 (-360, -254)	-270 (-354, -219)	.01 (.00, .01)	1.00 (.385)
STATION 6	58	175	-118 (-149, -87)	-105 (-122, -87)	.19 (.08, .43)	.92 (.385)

TABLE A. COMPARISON OF 25 HIGHEST OBSERVED AND PREDICTED SO2 CONCENTRATION VALUES (UNPAIRED IN TIME OR LOCATION)

CLIFTY CREEK (1976) MODEL: PPSP AVERAGING TIME: 24 HOURS

DATA SETS	AVERAGE OBSERVED VALUE (Co) (UG/M**3)	AVERAGE PREDICTED VALUE (Cp) (UG/M**3)	DIFFERENCE OF AVERAGES (Co - Cp) (UG/M**3)	DIFFERENCE OF MEDIANS (Co - Cp) (UG/M**3)	VARIANCE COMPARISON (So**2/Sp**2)	FREQUENCY DISTRIBUTION COMPARISON (FOBS-FPRED) (FRACTION)
1. ALL STATIONS/ALL EVENTS (A-4A)	125	418	-293 (-339, -247)	-270 (-287, -229)	.03 (.01, .07)	1.00 (.385)
2. BY STATION/ALL EVENTS (A-4B)						
STATION 1	96	114	-17 (-36, 1)	-8 (-25, 5)	.20 (.09, .46)	.28 (.385)
STATION 2	85	164	-79 (-100, -57)	-70 (-91, -50)	.14 (.06, .33)	.92 (.385)
STATION 3	64	350	-286 (-332, -239)	-240 (-281, -229)	.05 (.02, .12)	1.00 (.385)
STATION 4	108	169	-62 (-85, -39)	-55 (-71, -36)	.31 (.14, .71)	.84 (.385)
STATION 5	40	300	-260 (-317, -203)	-226 (-313, -171)	.02 (.01, .04)	1.00 (.385)
STATION 6	72	178	-106 (-128, -84)	-94 (-114, -81)	.15 (.07, .35)	1.00 (.385)

TABLE B. (PART 1) COMPARISON OF OBSERVED AND PREDICTED SO2 CONCENTRATION VALUES EVENT-BY-EVENT (PAIRED IN TIME)

CLIFTY CREEK (1975) MODEL: PPSP AVERAGING TIME: 1 HOUR

DATA SETS	NUMBER OF EVENTS	AVERAGE OBSERVED VALUE (Co) (UG/M**3)	AVERAGE PREDICTED VALUE (Cp) (UG/M**3)	PERFORMANCE MEASURES - UNPAIRED COMPARISONS: DIFFERENCE OF AVERAGES (Co - Cp) (UG/M**3)	VARIANCE COMPARISON (So**2/Sp**2)	FREQUENCY DISTRIBUTION COMPARISON (F(Co) - F(Cp)) MAX (FRACTION)
1. HIGHEST CONCENTRATION, EVENT-BY-EVENT (A-1)	4256	97.6	326.8	-229.2 (-246.7,-211.6)	.05 (.04, .05)	-.29 (.029)
2. ALL CONCENTRATIONS, ALL STATIONS (PAIRED IN TIME AND LOCATION) (B-3)	7247	72.5	244.2	-171.7 (-182.8,-160.5)	.05 (.05, .05)	-.23 (.023)
3. ALL CONCENTRATIONS, BY STATION (B-1)						
STATION 1	1521	85.4	117.6	-32.1 (-44.7, -19.6)	.22 (.19, .24)	-.35 (.049)
STATION 2	1113	77.2	215.7	-138.6 (-162.3,-114.8)	.08 (.07, .09)	.20 (.058)
STATION 3	1528	64.2	386.5	-322.3 (-354.0,-290.6)	.03 (.03, .03)	.35 (.049)
STATION 4	1198	83.7	211.6	-127.8 (-146.0,-109.7)	.14 (.13, .16)	.23 (.056)
STATION 5	969	44.1	307.6	-263.5 (-308.1,-218.9)	.00 (.00, .01)	-.45 (.062)
STATION 6	918	74.9	227.3	-152.4 (-177.8,-127.1)	.09 (.08, .11)	.24 (.063)
4. BY METEOROLOGICAL CONDITION, ALL STATIONS (B-4)						
A. WIND SPEED						
< 2.5 M/SEC	3310	62.0	319.1	-257.0 (-277.5,-236.5)	.03 (.03, .03)	.29 (.033)
2.5 TO 5.0	3433	75.7	193.3	-117.6 (-129.5,-105.6)	.09 (.08, .09)	-.27 (.033)
> 5.0 M/SEC	504	120.2	99.5	20.6 (1.5, 39.8)	.64 (.54, .77)	-.30 (.086)
B. STABILITY GROUP						
CLASS A & B	661	87.7	330.1	-242.4 (-291.6,-193.3)	.04 (.03, .04)	.24 (.075)
CLASS C	1299	84.6	316.6	-232.0 (-259.7,-204.2)	.07 (.06, .08)	.29 (.053)
CLASS D	4129	70.5	263.6	-193.1 (-208.0,-178.1)	.04 (.04, .04)	.25 (.030)
CLASS E & F	1158	57.5	44.8	12.7 (2.0, 23.5)	.24 (.21, .27)	-.77 (.057)

TABLE B. (PART 2) COMPARISON OF OBSERVED AND PREDICTED SO2 CONCENTRATION VALUES EVENT-BY-EVENT (PAIRED IN TIME)

CLIFTY CREEK (1975) MODEL: PPSP AVERAGING TIME: 1 HOUR

	NUMBER OF EVENTS	PERFORMANCE MEASURES - PAIRED COMPARISONS					
		BIAS		CHARACTERISTIC DISCREPANCIES			
		AVERAGE DIFFERENCE (Co - Cp) (UG/M**3)	FRACTION OF POSITIVE RESIDUALS (Co > Cp)	NOISE (SD) (UG/M**3)	ROOT MEAN SQUARE ERROR (UG/M**3)	AVERAGE ABSOLUTE DIFFERENCE (UG/M**3)	CORRELATION COEFFICIENT
1. HIGHEST CONCENTRATION, EVENT-BY-EVENT (A-1)	4256	-229.2 (-258.7,-199.7)	.50	575(563, 587)	619	320.6	.08 (.05, .11)
2. ALL CONCENTRATIONS, ALL STATIONS (PAIRED IN TIME AND LOCATION) (B-3)	7247	-171.7 (-189.7,-153.6)	.51	487(479, 495)	517	259.4	-.03 (-.06,-.01)
3. ALL CONCENTRATIONS, BY STATION (B-1)							
STATION 1	1521	-32.1 (-54.5, -9.8)	.64	255(246, 264)	257	157.5	-.07 (-.12,-.02)
STATION 2	1113	-138.6 (-170.5,-106.6)	.51	411(394, 429)	433	231.2	-.06 (-.12, .00)
STATION 3	1528	-322.3 (-377.3,-267.3)	.42	631(610, 655)	709	393.4	.00 (-.05, .05)
STATION 4	1198	-127.8 (-154.4,-101.2)	.42	313(301, 326)	338	209.4	.07 (.01, .13)
STATION 5	969	-263.5 (-330.7,-196.3)	.60	709(679, 742)	756	324.2	-.03 (-.09, .04)
STATION 6	918	-152.4 (-187.5,-117.4)	.45	397(379, 416)	425	236.4	-.05 (-.11, .02)
4. BY METEOROLOGICAL CONDITION, ALL STATIONS (B-4)							
A. WIND SPEED							
< 2.5 M/SEC	3310	-257.0 (-286.8,-227.2)	.47	606(592, 621)	658	334.0	-.05 (-.08,-.02)
2.5 TO 5.0	3433	-117.6 (-138.8, -96.3)	.53	353(345, 361)	372	202.8	.04 (.00, .07)
> 5.0 M/SEC	504	20.6 (-10.1, 51.3)	.61	218(206, 233)	219	155.7	.01 (-.08, .10)
B. STABILITY GROUP							
CLASS A & B	661	-242.4 (-303.3,-181.6)	.48	640(607, 677)	684	334.9	.03 (-.05, .10)
CLASS C	1299	-232.0 (-267.7,-196.3)	.40	515(496, 536)	565	319.9	-.04 (-.10, .01)
CLASS D	4129	-193.1 (-216.5,-169.6)	.45	495(485, 506)	531	273.7	-.07 (-.10,-.04)
CLASS E & F	1158	12.7 (.0, 25.4)	.85	195(187, 203)	195	97.6	-.11 (-.17,-.05)

TABLE B. (PART 1) COMPARISON OF OBSERVED AND PREDICTED SO2 CONCENTRATION VALUES EVENT-BY-EVENT (PAIRED IN TIME)

CLIFTY CREEK (1976) MODEL: PPSP AVERAGING TIME: 1 HOUR

DATA SETS	NUMBER OF EVENTS	AVERAGE OBSERVED VALUE (Co) (UG/M**3)	AVERAGE PREDICTED VALUE (Cp) (UG/M**3)	PERFORMANCE MEASURES - UNPAIRED COMPARISONS: DIFFERENCE OF AVERAGES (Co - Cp) (UG/M**3)	VARIANCE COMPARISON (So**2/Sp**2)	FREQUENCY DISTRIBUTION COMPARISON (F(Co) - F(Cp)) MAX (FRACTION)
1. HIGHEST CONCENTRATION, EVENT-BY-EVENT (A-1)	4782	111.0	289.5	-178.4 (-194.2,-162.7)	.06 (.05, .06)	-.31 (.028)
2. ALL CONCENTRATIONS, ALL STATIONS (PAIRED IN TIME AND LOCATION) (B-3)	8174	80.1	215.7	-135.6 (-145.5,-125.7)	.06 (.06, .06)	-.25 (.021)
3. ALL CONCENTRATIONS, BY STATION (B-1)						
STATION 1	1659	91.7	89.8	2.0 (-8.7, 12.6)	.40 (.36, .44)	-.40 (.047)
STATION 2	1466	85.3	148.3	-62.9 (-81.2, -44.7)	.13 (.12, .15)	-.43 (.050)
STATION 3	1645	59.8	371.9	-312.1 (-341.7,-282.5)	.02 (.02, .02)	.37 (.047)
STATION 4	1497	91.7	188.6	-96.9 (-113.0, -80.9)	.16 (.15, .18)	.17 (.050)
STATION 5	801	48.7	330.9	-282.2 (-334.1,-230.2)	.01 (.01, .01)	.28 (.068)
STATION 6	1106	93.2	217.8	-124.7 (-146.8,-102.6)	.09 (.08, .10)	-.24 (.058)
4. BY METEOROLOGICAL CONDITION, ALL STATIONS (B-4)						
A. WIND SPEED						
< 2.5 M/SEC	3125	65.8	316.2	-250.4 (-272.4,-228.4)	.03 (.03, .03)	.27 (.034)
2.5 TO 5.0	4560	86.3	156.7	-70.3 (-79.1, -61.5)	.15 (.15, .16)	-.30 (.028)
> 5.0 M/SEC	489	113.7	130.7	-17.0 (-37.3, 3.3)	.40 (.34, .48)	-.21 (.087)
B. STABILITY GROUP						
CLASS A & B	644	96.1	297.0	-200.9 (-248.1,-153.7)	.05 (.04, .06)	.21 (.076)
CLASS C	1565	88.3	301.6	-213.3 (-241.0,-185.5)	.05 (.05, .06)	.25 (.049)
CLASS D	4686	81.6	222.9	-141.4 (-153.8,-129.0)	.07 (.06, .07)	.20 (.028)
CLASS E & F	1279	56.7	45.7	11.1 (-1.1, 23.2)	.09 (.08, .10)	-.78 (.054)

TABLE B. (PART 2) COMPARISON OF OBSERVED AND PREDICTED SO2 CONCENTRATION VALUES EVENT-BY-EVENT (PAIRED IN TIME)

CLIFTY CREEK (1976) MODEL: PPSP AVERAGING TIME: 1 HOUR

	NUMBER OF EVENTS	PERFORMANCE MEASURES - PAIRED COMPARISONS: BIAS: AVERAGE DIFFERENCE (Co - Cp) (UG/M**3)	BIAS: FRACTION OF POSITIVE RESIDUALS (Co > Cp)	CHARACTERISTIC DISCREPANCIES: NOISE (SD) (UG/M**3)	CHARACTERISTIC DISCREPANCIES: ROOT MEAN SQUARE ERROR (UG/M**3)	CHARACTERISTIC DISCREPANCIES: AVERAGE ABSOLUTE DIFFERENCE (UG/M**3)	CORRELATION COEFFICIENT
1. HIGHEST CONCENTRATION, EVENT-BY-EVENT (A-1)	4782	-178.4 (-202.6,-154.3)	.52	545(535, 557)	574	283.3	.08 (.05, .11)
2. ALL CONCENTRATIONS, ALL STATIONS (PAIRED IN TIME AND LOCATION) (B-3)	8174	-80.1 (-108.5, -51.8)	.54	609(599, 618)	487	241.1	-.08 (-.10,-.06)
3. ALL CONCENTRATIONS, BY STATION (B-1)							
STATION 1	1659	2.0 (-15.7, 19.6)	.68	229(222, 238)	229	144.4	-.08 (-.13,-.03)
STATION 2	1466	-62.9 (-88.6, -37.3)	.64	360(347, 373)	365	188.8	-.04 (-.09, .01)
STATION 3	1645	-312.1 (-357.3,-266.9)	.39	622(601, 644)	695	382.5	-.11 (-.16,-.07)
STATION 4	1497	-96.9 (-122.9, -71.0)	.51	329(317, 341)	342	208.7	-.12 (-.17,-.07)
STATION 5	801	-282.2 (-351.7,-212.7)	.48	753(718, 792)	804	345.8	-.05 (-.12, .02)
STATION 6	1106	-124.7 (-155.5, -93.9)	.52	367(352, 383)	387	213.2	.07 (.02, .13)
4. BY METEOROLOGICAL CONDITION, ALL STATIONS (B-4)							
A. WIND SPEED							
< 2.5 M/SEC	3125	-250.4 (-280.3,-220.5)	.48	635(619, 651)	682	334.9	-.08 (-.11,-.04)
2.5 TO 5.0	4560	-70.3 (-87.7, -53.0)	.58	309(303, 315)	317	185.3	-.06 (-.09,-.03)
> 5.0 M/SEC	489	-17.0 (-46.8, 12.8)	.56	226(212, 241)	226	161.7	.03 (-.06, .12)
B. STABILITY GROUP							
CLASS A & B	644	-200.9 (-258.8,-143.1)	.51	621(589, 657)	652	327.4	-.08 (-.16,-.01)
CLASS C	1565	-213.3 (-246.9,-179.6)	.44	568(549, 589)	606	312.9	-.07 (-.12,-.02)
CLASS D	4686	-141.4 (-161.0,-121.8)	.49	444(436, 454)	466	244.0	-.11 (-.14,-.08)
CLASS E & F	1279	11.1 (-3.4, 25.5)	.86	231(223, 241)	232	99.3	-.16 (-.21,-.11)

TABLE B. (PART 1) COMPARISON OF OBSERVED AND PREDICTED SO2 CONCENTRATION VALUES EVENT-BY-EVENT (PAIRED IN TIME)

CLIFTY CREEK (1975) MODEL: PPSP AVERAGING TIME: 3 HOURS

DATA SETS	NUMBER OF EVENTS	AVERAGE OBSERVED VALUE (Co) (UG/M**3)	AVERAGE PREDICTED VALUE (Cp) (UG/M**3)	PERFORMANCE MEASURES - UNPAIRED COMPARISONS: DIFFERENCE OF AVERAGES (Co - Cp) (UG/M**3)	VARIANCE COMPARISON (So**2/Sp**2)	FREQUENCY DISTRIBUTION COMPARISON (F(Co) - F(Cp)) MAX (FRACTION)
1. HIGHEST CONCENTRATION, EVENT-BY-EVENT (A-1)	1552	78.9	270.9	-192.0 (-212.3,-171.6)	.05 (.05, .05)	.32 (.049)
2. ALL CONCENTRATIONS, ALL STATIONS (PAIRED IN TIME AND LOCATION) (B-3)	2902	57.8	201.1	-143.3 (-155.3,-131.3)	.05 (.05, .06)	.29 (.036)
3. ALL CONCENTRATIONS, BY STATION (B-1)						
STATION 1	592	71.1	99.8	-28.7 (-43.0, -14.4)	.25 (.21, .29)	-.26 (.079)
STATION 2	472	58.2	168.8	-110.5 (-132.3, -88.7)	.12 (.10, .14)	.28 (.089)
STATION 3	607	52.1	322.3	-270.2 (-306.8,-233.6)	.03 (.02, .03)	.44 (.078)
STATION 4	485	65.9	170.1	-104.3 (-123.3, -85.3)	.17 (.14, .20)	.30 (.087)
STATION 5	363	35.4	271.1	-235.7 (-283.9,-187.5)	.01 (.00, .01)	.36 (.101)
STATION 6	383	56.9	178.4	-121.5 (-145.9, -97.1)	.12 (.09, .14)	.33 (.098)
4. BY METEOROLOGICAL CONDITION, ALL STATIONS (B-4)						
A. WIND SPEED						
< 2.5 M/SEC	1397	49.0	249.4	-200.3 (-220.1,-180.5)	.04 (.03, .04)	.38 (.051)
2.5 TO 5.0	1313	61.7	166.2	-104.5 (-119.7, -89.3)	.07 (.07, .08)	.24 (.053)
> 5.0 M/SEC	192	95.0	88.8	6.2 (-19.0, 31.4)	.57 (.43, .76)	-.27 (.139)
B. STABILITY GROUP						
CLASS A & B	236	66.3	238.9	-172.6 (-217.9,-127.3)	.06 (.05, .08)	.37 (.125)
CLASS C	544	69.3	258.7	-189.3 (-219.0,-159.7)	.07 (.06, .09)	.35 (.082)
CLASS D	1699	55.7	212.9	-157.2 (-173.2,-141.1)	.05 (.04, .05)	.32 (.047)
CLASS E & F	423	46.6	58.6	-12.1 (-29.1, 5.0)	.12 (.10, .15)	-.60 (.094)

TABLE B. (PART 2) COMPARISON OF OBSERVED AND PREDICTED SO2 CONCENTRATION VALUES EVENT-BY-EVENT (PAIRED IN TIME)

CLIFTY CREEK (1975) MODEL: PPSP AVERAGING TIME: 3 HOURS

	NUMBER OF EVENTS	PERFORMANCE MEASURES - PAIRED COMPARISONS: BIAS: AVERAGE DIFFERENCE (Co - Cp) (UG/M**3)	BIAS: FRACTION OF POSITIVE RESIDUALS (Co > Cp)	CHARACTERISTIC DISCREPANCIES: NOISE (SD) (UG/M**3)	CHARACTERISTIC DISCREPANCIES: ROOT MEAN SQUARE ERROR (UG/M**3)	CHARACTERISTIC DISCREPANCIES: AVERAGE ABSOLUTE DIFFERENCE (UG/M**3)	CORRELATION COEFFICIENT
1. HIGHEST CONCENTRATION, EVENT-BY-EVENT (A-1)	1552	-192.0 (-220.8,-163.2)	.42	398(385, 413)	442	254.4	.12 (.07, .17)
2. ALL CONCENTRATIONS, ALL STATIONS (PAIRED IN TIME AND LOCATION) (B-3)	2902	-143.3 (-161.1,-125.5)	.41	330(322, 339)	360	200.9	.00 (-.04, .04)
3. ALL CONCENTRATIONS, BY STATION (D-1)							
STATION 1	592	-28.7 (-48.3, -9.1)	.58	181(172, 192)	184	121.4	-.06 (-.14, .02)
STATION 2	472	-110.5 (-139.3, -81.8)	.40	242(228, 259)	266	166.9	-.02 (-.11, .07)
STATION 3	607	-270.2 (-322.7,-217.7)	.34	456(432, 484)	530	316.8	.05 (-.03, .13)
STATION 4	485	-104.3 (-127.7, -80.9)	.33	198(187, 212)	224	152.2	.19 (.10, .27)
STATION 5	363	-235.7 (-305.7,-165.7)	.48	469(437, 506)	524	277.7	-.05 (-.15, .06)
STATION 6	383	-121.5 (-153.4, -89.6)	.35	240(224, 258)	268	170.8	.04 (-.06, .14)
4. BY METEOROLOGICAL CONDITION, ALL STATIONS (B-4)							
A. WIND SPEED							
< 2.5 M/SEC	1397	-200.3 (-226.7,-174.0)	.35	377(364, 392)	427	245.6	.00 (-.06, .05)
2.5 TO 5.0	1313	-104.5 (-126.4, -82.5)	.46	277(267, 288)	296	165.5	.06 (.00, .11)
> 5.0 M/SEC	192	6.2 (-22.1, 34.5)	.57	171(156, 191)	171	117.8	.07 (-.07, .21)
B. STABILITY GROUP							
CLASS A & B	236	-172.6 (-222.7,-122.5)	.35	354(325, 389)	393	222.6	.00 (-.13, .13)
CLASS C	544	-189.3 (-224.9,-153.8)	.33	347(328, 370)	395	242.2	.05 (-.03, .14)
CLASS D	1699	-157.2 (-180.5,-133.8)	.37	340(329, 352)	375	210.4	-.03 (-.08, .02)
CLASS E & F	423	-12.1 (-32.8, 8.7)	.72	190(178, 204)	190	97.7	-.21 (-.30,-.11)

TABLE B. (PART 1) COMPARISON OF OBSERVED AND PREDICTED SO2 CONCENTRATION VALUES EVENT-BY-EVENT (PAIRED IN TIME)

CLIFTY CREEK (1976) MODEL: PPSP AVERAGING TIME: 3 HOURS

DATA SETS	NUMBER OF EVENTS	AVERAGE OBSERVED VALUE (Co) (UG/M**3)	AVERAGE PREDICTED VALUE (Cp) (UG/M**3)	PERFORMANCE MEASURES - UNPAIRED COMPARISONS: DIFFERENCE OF AVERAGES (Co - Cp) (UG/M**3)	VARIANCE COMPARISON (So**2/Sp**2)	FREQUENCY DISTRIBUTION COMPARISON (F(Co) - F(Cp)) MAX (FRACTION)
1. HIGHEST CONCENTRATION, EVENT-BY-EVENT (A-1)	1747	90.3	243.8	-153.5 (-171.6,-135.4)	.06 (.06, .07)	.27 (.046)
2. ALL CONCENTRATIONS, ALL STATIONS (PAIRED IN TIME AND LOCATION) (B-3)	3246	64.8	180.0	-115.2 (-126.0,-104.4)	.07 (.07, .08)	.23 (.034)
3. ALL CONCENTRATIONS, BY STATION (B-1)						
STATION 1	655	75.2	74.3	.9 (-10.7, 12.6)	.54 (.46, .63)	-.31 (.075)
STATION 2	581	69.8	124.4	-54.5 (-73.3, -35.8)	.17 (.14, .20)	-.33 (.080)
STATION 3	650	48.8	312.0	-263.2 (-296.4,-229.9)	.02 (.02, .02)	.46 (.075)
STATION 4	594	73.8	156.5	-82.7 (-100.4, -65.0)	.21 (.17, .24)	.23 (.079)
STATION 5	321	37.3	274.8	-237.6 (-289.5,-185.7)	.01 (.01, .02)	.39 (.107)
STATION 6	445	73.9	178.5	-104.6 (-127.9, -81.2)	.10 (.09, .12)	.27 (.091)
4. BY METEOROLOGICAL CONDITION, ALL STATIONS (B-4)						
A. WIND SPEED						
< 2.5 M/SEC	1315	50.0	243.9	-193.9 (-215.1,-172.7)	.03 (.03, .04)	.37 (.053)
2.5 TO 5.0	1726	72.7	139.2	-66.5 (-77.9, -55.1)	.14 (.13, .16)	-.24 (.046)
> 5.0 M/SEC	205	92.9	113.8	-20.9 (-44.4, 2.6)	.40 (.30, .53)	-.19 (.134)
B. STABILITY GROUP						
CLASS A & B	251	75.5	242.0	-166.5 (-219.2,-113.9)	.05 (.04, .06)	.29 (.121)
CLASS C	604	69.8	231.5	-161.8 (-188.2,-135.4)	.08 (.07, .09)	.31 (.078)
CLASS D	1870	67.1	190.0	-122.9 (-137.1,-108.6)	.08 (.07, .08)	.25 (.044)
CLASS E & F	521	45.5	54.7	-9.2 (-22.9, 4.5)	.12 (.10, .14)	-.60 (.084)

TABLE B. (PART 2) COMPARISON OF OBSERVED AND PREDICTED SO2 CONCENTRATION VALUES EVENT-BY-EVENT (PAIRED IN TIME)

CLIFTY CREEK (1976) MODEL: PPSP AVERAGING TIME: 3 HOURS

	NUMBER OF EVENTS	PERFORMANCE MEASURES - PAIRED COMPARISONS: BIAS: AVERAGE DIFFERENCE (Co - Cp) (UG/M**3)	BIAS: FRACTION OF POSITIVE RESIDUALS (Co > Cp)	CHARACTERISTIC DISCREPANCIES: NOISE (SD) (UG/M**3)	CHARACTERISTIC DISCREPANCIES: ROOT MEAN SQUARE ERROR (UG/M**3)	CHARACTERISTIC DISCREPANCIES: AVERAGE ABSOLUTE DIFFERENCE (UG/M**3)	CORRELATION COEFFICIENT
1. HIGHEST CONCENTRATION, EVENT-BY-EVENT (A-1)	1747	-153.5 (-176.4,-130.6)	.44	371(359, 384)	402	221.9	.16 (.11, .20)
2. ALL CONCENTRATIONS, ALL STATIONS (PAIRED IN TIME AND LOCATION) (B-3)	3246	-115.2 (-129.8,-100.6)	.46	317(310, 325)	337	186.1	-.05 (-.08,-.01)
3. ALL CONCENTRATIONS, BY STATION (B-1)							
STATION 1	655	.9 (-15.6, 17.4)	.62	158(149, 167)	157	110.2	-.08 (-.16, .00)
STATION 2	581	-54.5 (-76.2, -32.9)	.56	229(216, 243)	235	143.0	.02 (-.07, .10)
STATION 3	650	-263.2 (-304.9,-221.4)	.31	437(415, 463)	510	306.9	-.09 (-.17,-.02)
STATION 4	594	-82.7 (-106.3, -59.1)	.43	224(212, 238)	239	155.7	-.06 (-.14, .03)
STATION 5	321	-237.6 (-301.1,-174.0)	.36	470(437, 510)	526	274.7	.04 (-.07, .15)
STATION 6	445	-104.6 (-130.1, -79.0)	.41	236(221, 253)	258	154.7	.20 (.11, .29)
4. BY METEOROLOGICAL CONDITION, ALL STATIONS (B-4)							
A. WIND SPEED							
< 2.5 M/SEC	1315	-193.9 (-220.2,-167.6)	.36	393(379, 409)	438	241.7	-.01 (-.07, .04)
2.5 TO 5.0	1726	-66.5 (-82.7, -50.3)	.53	245(237, 254)	254	151.5	-.04 (-.09, .01)
> 5.0 M/SEC	205	-20.9 (-49.9, 8.2)	.50	166(151, 184)	166	121.5	.07 (-.07, .21)
B. STABILITY GROUP							
CLASS A & B	251	-166.5 (-232.5,-100.5)	.42	427(393, 469)	458	242.9	-.04 (-.17, .08)
CLASS C	604	-161.8 (-189.9,-133.6)	.36	328(311, 348)	366	218.7	.03 (-.05, .11)
CLASS D	1870	-122.9 (-142.2,-103.5)	.42	321(311, 332)	344	193.6	-.10 (-.14,-.05)
CLASS E & F	521	-9.2 (-26.8, 8.4)	.73	171(161, 182)	171	94.1	-.26 (-.34,-.18)

TABLE B. (PART 1) COMPARISON OF OBSERVED AND PREDICTED SO2 CONCENTRATION VALUES EVENT-BY-EVENT (PAIRED IN TIME)

CLIFTY CREEK (1975) MODEL: PPSP AVERAGING TIME: 24 HOURS

DATA SETS	NUMBER OF EVENTS	AVERAGE OBSERVED VALUE (Co) (UG/M**3)	AVERAGE PREDICTED VALUE (Cp) (UG/M**3)	PERFORMANCE MEASURES - UNPAIRED COMPARISONS		
				DIFFERENCE OF AVERAGES (Co - Cp) (UG/M**3)	VARIANCE COMPARISON (So**2/Sp**2)	FREQUENCY DISTRIBUTION COMPARISON (F(Co) - F(Cp)) MAX (FRACTION)
1. HIGHEST CONCENTRATION, EVENT-BY-EVENT (A-1)	339	38.1	132.5	-94.4 (-109.8, -79.0)	.06 (.05, .07)	.47 (.104)
2. ALL CONCENTRATIONS, ALL STATIONS (PAIRED IN TIME AND LOCATION) (B-3)	1235	20.6	59.6	-39.0 (-44.5, -33.5)	.07 (.06, .07)	-.29 (.055)
3. ALL CONCENTRATIONS, BY STATION (B-1)						
STATION 1	221	27.8	33.7	-5.9 (-13.2, 1.4)	.46 (.35, .60)	-.27 (.129)
STATION 2	205	19.5	48.7	-29.2 (-37.9, -20.5)	.14 (.10, .18)	.33 (.134)
STATION 3	220	21.8	110.9	-89.1 (-108.6, -69.6)	.03 (.02, .04)	.43 (.130)
STATION 4	197	23.6	53.5	-29.9 (-39.7, -20.1)	.18 (.14, .24)	.28 (.137)
STATION 5	228	12.6	55.1	-42.5 (-57.7, -27.3)	.01 (.01, .01)	-.60 (.127)
STATION 6	164	18.3	52.9	-34.6 (-45.4, -23.8)	.11 (.08, .15)	.35 (.150)

TABLE B. (PART 2) COMPARISON OF OBSERVED AND PREDICTED SO2 CONCENTRATION VALUES EVENT-BY-EVENT (PAIRED IN TIME)

CLIFTY CREEK (1975) MODEL: PPSP AVERAGING TIME: 24 HOURS

	NUMBER OF EVENTS	PERFORMANCE MEASURES - PAIRED COMPARISONS					
		BIAS		CHARACTERISTIC DISCREPANCIES			
		AVERAGE DIFFERENCE (Co - Cp) (UG/M**3)	FRACTION OF POSITIVE RESIDUALS (Co > Cp)	NOISE (SD) (UG/M**3)	ROOT MEAN SQUARE ERROR (UG/M**3)	AVERAGE ABSOLUTE DIFFERENCE (UG/M**3)	CORRELATION COEFFICIENT
1. HIGHEST CONCENTRATION, EVENT-BY-EVENT (A-1)	339	-94.4 (-110.7, -78.1)	.29	133(124, 144)	163	106.9	.32 (.22, .41)
2. ALL CONCENTRATIONS, ALL STATIONS (PAIRED IN TIME AND LOCATION) (B-3)	1235	-39.0 (-45.0, -33.0)	.46	92(88, 95)	100	53.4	.26 (.20, .31)
3. ALL CONCENTRATIONS, BY STATION (B-1)							
STATION 1	221	-5.9 (-13.8, 2.0)	.57	50(45, 55)	50	33.0	.21 (.08, .33)
STATION 2	205	-29.2 (-38.6, -19.7)	.42	58(53, 64)	65	41.5	.25 (.12, .37)
STATION 3	220	-89.1 (-109.2, -69.0)	.35	137(125, 151)	163	99.6	.38 (.26, .49)
STATION 4	197	-29.9 (-39.1, -20.8)	.38	52(47, 58)	60	38.2	.63 (.53, .71)
STATION 5	228	-42.5 (-57.9, -27.1)	.65	115(105, 127)	122	57.6	.14 (.01, .26)
STATION 6	164	-34.6 (-44.1, -25.1)	.37	65(59, 73)	73	46.1	.23 (.08, .37)

TABLE B. (PART 1) COMPARISON OF OBSERVED AND PREDICTED SO2 CONCENTRATION VALUES EVENT-BY-EVENT (PAIRED IN TIME)

CLIFTY CREEK (1976) MODEL: PPSP AVERAGING TIME: 24 HOURS

DATA SETS	NUMBER OF EVENTS	AVERAGE OBSERVED VALUE (Co) (UG/M**3)	AVERAGE PREDICTED VALUE (Cp) (UG/M**3)	PERFORMANCE MEASURES: DIFFERENCE OF AVERAGES (Co - Cp) (UG/M**3)	PERFORMANCE MEASURES: VARIANCE COMPARISON (So**2/Sp**2)	UNPAIRED COMPARISONS: FREQUENCY DISTRIBUTION COMPARISON (F(Co) - F(Cp)) MAX (FRACTION)
1. HIGHEST CONCENTRATION, EVENT-BY-EVENT (A-1)	361	45.2	122.6	-77.5 (-90.0, -64.9)	.08 (.07, .10)	.42 (.101)
2. ALL CONCENTRATIONS, ALL STATIONS (PAIRED IN TIME AND LOCATION) (B-3)	1274	24.1	57.5	-33.4 (-38.2, -28.6)	.10 (.09, .11)	-.26 (.054)
3. ALL CONCENTRATIONS, BY STATION (B-1)						
STATION 1	249	28.3	25.0	3.3 (-2.6, 9.1)	.60 (.47, .77)	-.37 (.122)
STATION 2	252	24.5	36.3	-11.7 (-19.0, -4.5)	.22 (.17, .28)	-.41 (.121)
STATION 3	219	20.7	113.7	-93.0 (-109.1, -76.9)	.03 (.02, .04)	.56 (.130)
STATION 4	224	28.4	53.9	-25.5 (-34.3, -16.7)	.35 (.27, .45)	.27 (.129)
STATION 5	153	13.0	71.9	-58.9 (-78.2, -39.7)	.02 (.01, .02)	.37 (.155)
STATION 6	177	25.9	55.7	-29.7 (-39.8, -19.7)	.13 (.10, .18)	.29 (.145)

TABLE B. (PART 2) COMPARISON OF OBSERVED AND PREDICTED SO2 CONCENTRATION VALUES EVENT-BY-EVENT (PAIRED IN TIME)

CLIFTY CREEK (1976) MODEL: PPSP AVERAGING TIME: 24 HOURS

		PERFORMANCE MEASURES - PAIRED COMPARISONS					
		BIAS		CHARACTERISTIC DISCREPANCIES			
	NUMBER OF EVENTS	AVERAGE DIFFERENCE (Co - Cp) (UG/M**3)	FRACTION OF POSITIVE RESIDUALS (Co > Cp)	NOISE (SD) (UG/M**3)	ROOT MEAN SQUARE ERROR (UG/M**3)	AVERAGE ABSOLUTE DIFFERENCE (UG/M**3)	CORRELATION COEFFICIENT
1. HIGHEST CONCENTRATION, EVENT-BY-EVENT (A-1)	361	-77.5 (-89.6, -65.3)	.28	112(105, 121)	136	90.3	.28 (.18, .37)
2. ALL CONCENTRATIONS, ALL STATIONS (PAIRED IN TIME AND LOCATION) (B-3)	1274	-33.4 (-39.1, -27.7)	.48	84(81, 87)	90	51.3	.15 (.10, .20)
3. ALL CONCENTRATIONS, BY STATION (B-1)							
STATION 1	249	3.3 (-2.3, 8.8)	.66	42(38, 46)	42	28.6	.22 (.10, .33)
STATION 2	252	-11.7 (-19.7, -3.8)	.59	52(48, 57)	53	34.6	.28 (.16, .39)
STATION 3	219	-93.0 (-109.6, -76.4)	.30	118(108, 130)	150	102.3	.13 (.00, .26)
STATION 4	224	-25.5 (-33.8, -17.2)	.42	57(52, 63)	62	41.4	.32 (.19, .43)
STATION 5	153	-58.9 (-79.4, -38.5)	.41	118(107, 134)	132	68.8	.15 (-.01, .30)
STATION 6	177	-29.7 (-37.7, -21.7)	.41	56(51, 63)	64	41.2	.47 (.35, .58)

TABLE C

COMPARISON OF MAXIMUM OBSERVED AND MAXIMUM
PREDICTED CONCENTRATION VALUES, PAIRED BY STATION (A - 2)

CLIFTY CREEK (1975) MODEL: PPSP AVERAGING TIME: 1 HOUR

AVERAGE OBSERVED VALUE (Co) (UG/M**3)	AVERAGE PREDICTED VALUE (Cp) (UG/M**3)	PERFORMANCE MEASURES: BIAS: AVERAGE DIFFERENCE (Co - Cp) (UG/M**3)	BIAS: FRACTION OF POSITIVE RESIDUALS (Co > Cp)	CHARACTERISTIC DISCREPANCIES: NOISE (SD) (UG/M**3)	ROOT MEAN SQUARE ERROR (UG/M**3)	AVERAGE ABSOLUTE DIFFERENCE (UG/M**3)	CORRELATION COEFFICIENT
994.5	3688.7	-2694.2 (-4449, -939)	.00	1673 (1044,4102)	3097	2694.2	.01 (-.81, .81)

COMPARISON OF SECOND MAXIMUM OBSERVED AND SECOND MAXIMUM
PREDICTED CONCENTRATION VALUES, PAIRED BY STATION (A - 2)

CLIFTY CREEK (1975) MODEL: PPSP AVERAGING TIME: 1 HOUR

AVERAGE OBSERVED VALUE (Co) (UG/M**3)	AVERAGE PREDICTED VALUE (Cp) (UG/M**3)	PERFORMANCE MEASURES: BIAS: AVERAGE DIFFERENCE (Co - Cp) (UG/M**3)	BIAS: FRACTION OF POSITIVE RESIDUALS (Co > Cp)	CHARACTERISTIC DISCREPANCIES: NOISE (SD) (UG/M**3)	ROOT MEAN SQUARE ERROR (UG/M**3)	AVERAGE ABSOLUTE DIFFERENCE (UG/M**3)	CORRELATION COEFFICIENT
742.4	3344.2	-2601.8 (-4150, -1054)	.00	1475 (921,3617)	2930	2601.8	-.50 (-.93, .52)

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TABLE C

COMPARISON OF MAXIMUM OBSERVED AND MAXIMUM
PREDICTED CONCENTRATION VALUES, PAIRED BY STATION (A - 2)

CLIFTY CREEK (1976) MODEL: PPSP AVERAGING TIME: 1 HOUR

AVERAGE OBSERVED VALUE (Co) (UG/M**3)	AVERAGE PREDICTED VALUE (Cp) (UG/M**3)	PERFORMANCE MEASURES					
		BIAS		CHARACTERISTIC DISCREPANCIES			
		AVERAGE DIFFERENCE (Co - Cp) (UG/M**3)	FRACTION OF POSITIVE RESIDUALS (Co > Cp)	NOISE (SD) (UG/M**3)	ROOT MEAN SQUARE ERROR (UG/M**3)	AVERAGE ABSOLUTE DIFFERENCE (UG/M**3)	CORRELATION COEFFICIENT
858.0	4385.8	-3527.8 (-5223, -1832)	.00	1616 (1009,3963)	3824	3527.8	.29 (-.68, .89)

COMPARISON OF SECOND MAXIMUM OBSERVED AND SECOND MAXIMUM
PREDICTED CONCENTRATION VALUES, PAIRED BY STATION (A - 2)

CLIFTY CREEK (1976) MODEL: PPSP AVERAGING TIME: 1 HOUR

AVERAGE OBSERVED VALUE (Co) (UG/M**3)	AVERAGE PREDICTED VALUE (Cp) (UG/M**3)	PERFORMANCE MEASURES					
		BIAS		CHARACTERISTIC DISCREPANCIES			
		AVERAGE DIFFERENCE (Co - Cp) (UG/M**3)	FRACTION OF POSITIVE RESIDUALS (Co > Cp)	NOISE (SD) (UG/M**3)	ROOT MEAN SQUARE ERROR (UG/M**3)	AVERAGE ABSOLUTE DIFFERENCE (UG/M**3)	CORRELATION COEFFICIENT
701.3	3807.3	-3106.0 (-4954, -1258)	.00	1761 (1099,4320)	3497	3106.0	-.70 (-.96, .25)

TABLE C

COMPARISON OF MAXIMUM OBSERVED AND MAXIMUM
PREDICTED CONCENTRATION VALUES, PAIRED BY STATION (A - 2)

CLIFTY CREEK (1975) MODEL: PPSP AVERAGING TIME: 3 HOURS

AVERAGE OBSERVED VALUE (Co) (UG/M**3)	AVERAGE PREDICTED VALUE (Cp) (UG/M**3)	PERFORMANCE MEASURES					
		BIAS		CHARACTERISTIC DISCREPANCIES			
		AVERAGE DIFFERENCE (Co - Cp) (UG/M**3)	FRACTION OF POSITIVE RESIDUALS (Co > Cp)	NOISE (SD) (UG/M**3)	ROOT MEAN SQUARE ERROR (UG/M**3)	AVERAGE ABSOLUTE DIFFERENCE (UG/M**3)	CORRELATION COEFFICIENT
543.3	1821.1	-1277.8 (-2367, -189)	.00	1038 (648,2545)	1591	1277.8	.08 (-.78, .84)

COMPARISON OF SECOND MAXIMUM OBSERVED AND SECOND MAXIMUM
PREDICTED CONCENTRATION VALUES, PAIRED BY STATION (A - 2)

CLIFTY CREEK (1975) MODEL: PPSP AVERAGING TIME: 3 HOURS

AVERAGE OBSERVED VALUE (Co) (UG/M**3)	AVERAGE PREDICTED VALUE (Cp) (UG/M**3)	PERFORMANCE MEASURES					
		BIAS		CHARACTERISTIC DISCREPANCIES			
		AVERAGE DIFFERENCE (Co - Cp) (UG/M**3)	FRACTION OF POSITIVE RESIDUALS (Co > Cp)	NOISE (SD) (UG/M**3)	ROOT MEAN SQUARE ERROR (UG/M**3)	AVERAGE ABSOLUTE DIFFERENCE (UG/M**3)	CORRELATION COEFFICIENT
476.8	1528.9	-1052.2 (-1834, -270)	.00	745 (465,1828)	1253	1052.2	.01 (-.81, .81)

TABLE C

COMPARISON OF MAXIMUM OBSERVED AND MAXIMUM
PREDICTED CONCENTRATION VALUES, PAIRED BY STATION (A - 2)

CLIFTY CREEK (1976) MODEL: PPSP AVERAGING TIME: 3 HOURS

AVERAGE OBSERVED VALUE (Co) (UG/M**3)	AVERAGE PREDICTED VALUE (Cp) (UG/M**3)	PERFORMANCE MEASURES: BIAS: AVERAGE DIFFERENCE (Co - Cp) (UG/M**3)	BIAS: FRACTION OF POSITIVE RESIDUALS (Co > Cp)	CHARACTERISTIC DISCREPANCIES: NOISE (SD) (UG/M**3)	CHARACTERISTIC DISCREPANCIES: ROOT MEAN SQUARE ERROR (UG/M**3)	CHARACTERISTIC DISCREPANCIES: AVERAGE ABSOLUTE DIFFERENCE (UG/M**3)	CORRELATION COEFFICIENT
525.6	2149.7	-1624.0 (-2710, -539)	.00	1034 (646,2537)	1879	1624.0	-.42 (-.92, .60)

COMPARISON OF SECOND MAXIMUM OBSERVED AND SECOND MAXIMUM
PREDICTED CONCENTRATION VALUES, PAIRED BY STATION (A - 2)

CLIFTY CREEK (1976) MODEL: PPSP AVERAGING TIME: 3 HOURS

AVERAGE OBSERVED VALUE (Co) (UG/M**3)	AVERAGE PREDICTED VALUE (Cp) (UG/M**3)	PERFORMANCE MEASURES: BIAS: AVERAGE DIFFERENCE (Co - Cp) (UG/M**3)	BIAS: FRACTION OF POSITIVE RESIDUALS (Co > Cp)	CHARACTERISTIC DISCREPANCIES: NOISE (SD) (UG/M**3)	CHARACTERISTIC DISCREPANCIES: ROOT MEAN SQUARE ERROR (UG/M**3)	CHARACTERISTIC DISCREPANCIES: AVERAGE ABSOLUTE DIFFERENCE (UG/M**3)	CORRELATION COEFFICIENT
471.5	1750.1	-1278.6 (-2158, -399)	.00	838 (523,2055)	1490	1278.6	-.54 (-.94, .49)

TABLE C

COMPARISON OF MAXIMUM OBSERVED AND MAXIMUM
PREDICTED CONCENTRATION VALUES, PAIRED BY STATION (A - 2)

CLIFTY CREEK (1975) MODEL: PPSP AVERAGING TIME: 24 HOURS

AVERAGE OBSERVED VALUE (Co) (UG/M**3)	AVERAGE PREDICTED VALUE (Cp) (UG/M**3)	PERFORMANCE MEASURES					
		BIAS		CHARACTERISTIC DISCREPANCIES			
		AVERAGE DIFFERENCE (Co - Cp) (UG/M**3)	FRACTION OF POSITIVE RESIDUALS (Co > Cp)	NOISE (SD) (UG/M**3)	ROOT MEAN SQUARE ERROR (UG/M**3)	AVERAGE ABSOLUTE DIFFERENCE (UG/M**3)	CORRELATION COEFFICIENT
151.8	464.2	-312.4 (-577, -47)	.00	252 (158, 619)	388	312.4	-.26 (-.89, .70)

COMPARISON OF SECOND MAXIMUM OBSERVED AND SECOND MAXIMUM
PREDICTED CONCENTRATION VALUES, PAIRED BY STATION (A - 2)

CLIFTY CREEK (1975) MODEL: PPSP AVERAGING TIME: 24 HOURS

AVERAGE OBSERVED VALUE (Co) (UG/M**3)	AVERAGE PREDICTED VALUE (Cp) (UG/M**3)	PERFORMANCE MEASURES					
		BIAS		CHARACTERISTIC DISCREPANCIES			
		AVERAGE DIFFERENCE (Co - Cp) (UG/M**3)	FRACTION OF POSITIVE RESIDUALS (Co > Cp)	NOISE (SD) (UG/M**3)	ROOT MEAN SQUARE ERROR (UG/M**3)	AVERAGE ABSOLUTE DIFFERENCE (UG/M**3)	CORRELATION COEFFICIENT
124.8	382.1	-257.3 (-434, -81)	.00	168 (105, 412)	299	257.3	-.27 (-.89, .69)

TABLE C

COMPARISON OF MAXIMUM OBSERVED AND MAXIMUM
PREDICTED CONCENTRATION VALUES, PAIRED BY STATION (A - 2)

CLIFTY CREEK (1976) MODEL: PPSP AVERAGING TIME: 24 HOURS

AVERAGE OBSERVED VALUE (Co) (UG/M**3)	AVERAGE PREDICTED VALUE (Cp) (UG/M**3)	PERFORMANCE MEASURES					
		BIAS		CHARACTERISTIC DISCREPANCIES			
		AVERAGE DIFFERENCE (Co - Cp) (UG/M**3)	FRACTION OF POSITIVE RESIDUALS (Co > Cp)	NOISE (SD) (UG/M**3)	ROOT MEAN SQUARE ERROR (UG/M**3)	AVERAGE ABSOLUTE DIFFERENCE (UG/M**3)	CORRELATION COEFFICIENT
132.8	418.4	-285.6 (-500, -71)	.00	205 (128, 502)	341	285.6	-.52 (-.94, .50)

COMPARISON OF SECOND MAXIMUM OBSERVED AND SECOND MAXIMUM
PREDICTED CONCENTRATION VALUES, PAIRED BY STATION (A - 2)

CLIFTY CREEK (1976) MODEL: PPSP AVERAGING TIME: 24 HOURS

AVERAGE OBSERVED VALUE (Co) (UG/M**3)	AVERAGE PREDICTED VALUE (Cp) (UG/M**3)	PERFORMANCE MEASURES					
		BIAS		CHARACTERISTIC DISCREPANCIES			
		AVERAGE DIFFERENCE (Co - Cp) (UG/M**3)	FRACTION OF POSITIVE RESIDUALS (Co > Cp)	NOISE (SD) (UG/M**3)	ROOT MEAN SQUARE ERROR (UG/M**3)	AVERAGE ABSOLUTE DIFFERENCE (UG/M**3)	CORRELATION COEFFICIENT
119.9	346.2	-226.3 (-437, -16)	.00	200 (125, 492)	291	226.3	-.68 (-.96, .30)

TABLE D. COMPARISONS OF HIGHEST OBSERVED AND PREDICTED CONCENTRATION VALUES FOR DIFFERENT TIME AND SPACE PAIRINGS (A - 3)

CLIFTY CREEK (1975) MODEL:PPSP AVERAGING TIME: 1 HOUR

SO2 CONCENTRATIONS (UG/M**3)
(STATION,DAY,HOUR)

	OBSERVED	PREDICTED	DIFFERENCE
MAX Co AND MAX Cp	1672.7 (3, 24,13)	5913.0 (5,349, 9)	-4240.3
MAX Co AND PREDICTED VALUE FOR SAME EVENT AND LOCATION AS MAX Co	1672.7 (3, 24,13)	356.0 (3, 24,13)	1316.7
MAX Co AND HIGHEST PREDICTED VALUE FOR SAME EVENT AS MAX Co (ANY LOCATION)	1672.7 (3, 24,13)	356.0 (3, 24,13)	1316.7
MAX Co AND HIGHEST PREDICTED VALUE FOR SAME LOCATION AS MAX Co (ANY EVENT)	1672.7 (3, 24,13)	5200.0 (3,120,16)	-3527.3
MAX Cp AND OBSERVED VALUE FOR SAME EVENT AND LOCATION AS MAX Cp	1.6 (5,349, 9)	5913.0 (5,349, 9)	-5911.4
MAX Cp AND HIGHEST OBSERVED VALUE FOR SAME EVENT AS MAX Cp (ANY LOCATION)	1.6 (5,349, 9)	5913.0 (5,349, 9)	-5911.4
MAX Cp AND HIGHEST OBSERVED VALUE FOR SAME LOCATION AS MAX Cp (ANY EVENT)	457.0 (5,356,14)	5913.0 (5,349, 9)	-5456.0

TABLE D. COMPARISONS OF HIGHEST OBSERVED AND PREDICTED CONCENTRATION VALUES FOR DIFFERENT TIME AND SPACE PAIRINGS (A - 3)

CLIFTY CREEK (1976) MODEL:PPSP AVERAGING TIME: 1 HOUR

SO2 CONCENTRATIONS (UG/M**3)
(STATION,DAY,HOUR)

	OBSERVED	PREDICTED	DIFFERENCE
MAX Co AND MAX Cp	950.8 (5,302,13)	6440.0 (5,235,10)	-5489.2
MAX Co AND PREDICTED VALUE FOR SAME EVENT AND LOCATION AS MAX Co	950.8 (5,302,13)	.0 (5,302,13)	950.8
MAX Co AND HIGHEST PREDICTED VALUE FOR SAME EVENT AS MAX Co (ANY LOCATION)	950.8 (5,302,13)	354.0 (6,302,13)	596.8
MAX Co AND HIGHEST PREDICTED VALUE FOR SAME LOCATION AS MAX Co (ANY EVENT)	950.8 (5,302,13)	6440.0 (5,235,10)	-5489.2
MAX Cp AND OBSERVED VALUE FOR SAME EVENT AND LOCATION AS MAX Cp	5.0 (5,235,10)	6440.0 (5,235,10)	-6435.0
MAX Cp AND HIGHEST OBSERVED VALUE FOR SAME EVENT AS MAX Cp (ANY LOCATION)	5.0 (1,235,10)	6440.0 (5,235,10)	-6435.0
MAX Cp AND HIGHEST OBSERVED VALUE FOR SAME LOCATION AS MAX Cp (ANY EVENT)	950.8 (5,302,13)	6440.0 (5,235,10)	-5489.2

TABLE D. COMPARISONS OF HIGHEST OBSERVED AND PREDICTED CONCENTRATION VALUES FOR DIFFERENT TIME AND SPACE PAIRINGS (A - 3)

CLIFTY CREEK (1975) MODEL:PPSP AVERAGING TIME: 3 HOURS

SO2 CONCENTRATIONS (UG/M**3)
(STATION,DAY,TIME PERIOD)

	OBSERVED	PREDICTED	DIFFERENCE
MAX Co AND MAX Cp	794.0 (3, 24, 5)	3466.3 (3,328, 5)	-2672.3
MAX Co AND PREDICTED VALUE FOR SAME EVENT AND LOCATION AS MAX Co	794.0 (3, 24, 5)	242.0 (3, 24, 5)	552.0
MAX Co AND HIGHEST PREDICTED VALUE FOR SAME EVENT AS MAX Co (ANY LOCATION)	794.0 (3, 24, 5)	242.0 (3, 24, 5)	552.0
MAX Co AND HIGHEST PREDICTED VALUE FOR SAME LOCATION AS MAX Co (ANY EVENT)	794.0 (3, 24, 5)	3466.3 (3,328, 5)	-2672.3
MAX Cp AND OBSERVED VALUE FOR SAME EVENT AND LOCATION AS MAX Cp	19.3 (3,328, 5)	3466.3 (3,328, 5)	-3447.0
MAX Cp AND HIGHEST OBSERVED VALUE FOR SAME EVENT AS MAX Cp (ANY LOCATION)	20.0 (5,328, 5)	3466.3 (3,328, 5)	-3446.3
MAX Cp AND HIGHEST OBSERVED VALUE FOR SAME LOCATION AS MAX Cp (ANY EVENT)	794.0 (3, 24, 5)	3466.3 (3,328, 5)	-2672.3

TABLE D. COMPARISONS OF HIGHEST OBSERVED AND PREDICTED CONCENTRATION VALUES FOR DIFFERENT TIME AND SPACE PAIRINGS (A - 3)

CLIFTY CREEK (1976) MODEL:PPSP AVERAGING TIME: 3 HOURS

SO2 CONCENTRATIONS (UG/M**3)
(STATION,DAY,TIME PERIOD)

	OBSERVED	PREDICTED	DIFFERENCE
MAX Co AND MAX Cp	623.7 (4,362, 5)	3861.3 (3,177, 7)	-3237.7
MAX Co AND PREDICTED VALUE FOR SAME EVENT AND LOCATION AS MAX Co	623.7 (4,362, 5)	330.0 (4,362, 5)	293.7
MAX Co AND HIGHEST PREDICTED VALUE FOR SAME EVENT AS MAX Co (ANY LOCATION)	623.7 (4,362, 5)	599.7 (3,362, 5)	24.0
MAX Co AND HIGHEST PREDICTED VALUE FOR SAME LOCATION AS MAX Co (ANY EVENT)	623.7 (4,362, 5)	1442.0 (4,177, 7)	-818.3
MAX Cp AND OBSERVED VALUE FOR SAME EVENT AND LOCATION AS MAX Cp	.0 (3,177, 7)	3861.3 (3,177, 7)	-3861.3
MAX Cp AND HIGHEST OBSERVED VALUE FOR SAME EVENT AS MAX Cp (ANY LOCATION)	.3 (6,177, 7)	3861.3 (3,177, 7)	-3861.0
MAX Cp AND HIGHEST OBSERVED VALUE FOR SAME LOCATION AS MAX Cp (ANY EVENT)	542.0 (3,279, 4)	3861.3 (3,177, 7)	-3319.3

TABLE D. COMPARISONS OF HIGHEST OBSERVED / PREDICTED CONCENTRATION VALUES FOR DIFFERENT TIME AND SPACE PAIRINGS (A - 3)

CLIFTY CREEK (1975) MODEL:PPSP AVERAGING TIME: 24 HOURS

SO2 CONCENTRATIONS (UG/M**3)
(STATION,DAY)

	OBSERVED	PREDICTED	DIFFERENCE
MAX Co AND MAX Cp	209.5 (3, 24)	776.5 (3, 23)	-567.0
MAX Co AND PREDICTED VALUE FOR SAME EVENT AND LOCATION AS MAX Co	209.5 (3, 24)	68.8 (3, 24)	140.7
MAX Co AND HIGHEST PREDICTED VALUE FOR SAME EVENT AS MAX Co (ANY LOCATION)	209.5 (3, 24)	68.8 (3, 24)	140.7
MAX Co AND HIGHEST PREDICTED VALUE FOR SAME LOCATION AS MAX Co (ANY EVENT)	209.5 (3, 24)	776.5 (3, 23)	-567.0
MAX Cp AND OBSERVED VALUE FOR SAME EVENT AND LOCATION AS MAX Cp	139.6 (3, 23)	776.5 (3, 23)	-636.8
MAX Cp AND HIGHEST OBSERVED VALUE FOR SAME EVENT AS MAX Cp (ANY LOCATION)	139.6 (3, 23)	776.5 (3, 23)	-636.8
MAX Cp AND HIGHEST OBSERVED VALUE FOR SAME LOCATION AS MAX Cp (ANY EVENT)	209.5 (3, 24)	776.5 (3, 23)	-567.0

TABLE D. COMPARISONS OF HIGHEST OBSERVED AND PREDICTED CONCENTRATION VALUES FOR DIFFERENT TIME AND SPACE PAIRINGS (A - 3)

CLIFTY CREEK (1976) MODEL:PPSP AVERAGING TIME: 24 HOURS

SO2 CONCENTRATIONS (UG/M**3)
(STATION,DAY)

	OBSERVED	PREDICTED	DIFFERENCE
MAX Co AND MAX Cp	181.2 (4,330)	674.5 (3,319)	-493.3
MAX Co AND PREDICTED VALUE FOR SAME EVENT AND LOCATION AS MAX Co	181.2 (4,330)	121.7 (4,330)	59.5
MAX Co AND HIGHEST PREDICTED VALUE FOR SAME EVENT AS MAX Co (ANY LOCATION)	181.2 (4,330)	233.8 (3,330)	-52.6
MAX Co AND HIGHEST PREDICTED VALUE FOR SAME LOCATION AS MAX Co (ANY EVENT)	181.2 (4,330)	339.5 (4,298)	-158.3
MAX Cp AND OBSERVED VALUE FOR SAME EVENT AND LOCATION AS MAX Cp	28.8 (3,319)	674.5 (3,319)	-645.7
MAX Cp AND HIGHEST OBSERVED VALUE FOR SAME EVENT AS MAX Cp (ANY LOCATION)	103.0 (2,319)	674.5 (3,319)	-571.5
MAX Cp AND HIGHEST OBSERVED VALUE FOR SAME LOCATION AS MAX Cp (ANY EVENT)	132.7 (3,167)	674.5 (3,319)	-541.8